SWRC Research addresses topics of highest national priority:

Water Management & Conservation
- New methods to estimate riparian and basin water loss and aquifer recharge
- Models of overland and channel flow to predict and control urban and rural flooding
- Leadership in national teams for resource planning and conservation
- Spatial analysis tools for assessing impacts of land cover and climate change on runoff, erosion, and water quality and quantity

Erosion & Sedimentation
- New soil erosion and sediment prediction technology for rangeland conservation
- New methods and structures for rangeland erosion control and rehabilitation
- Rates and amounts of erosion and sediment yield on rangelands

Semiarid Carbon Budget
- Rangeland carbon fluxes and their role in the world's carbon budget

Rangeland Monitoring & Rehabilitation
- Toolbox of sound methods for assessing the ecological health of rangelands
- Satellite images for mapping soil properties and moisture at regional scales

Prescribed and Wild Fires
- Impacts of fire on runoff and erosion
- Recovery after fires

Invasive Species
- Consequences of woody plant encroachment on water and carbon exchange

Decision Support
- Environmental & economic impacts of management practices on rangelands
- Tools to improve the scientific basis for decision-making by watershed groups

SWRC Collaborators

Federal Agencies:
- USDA ARS Laboratories in Arizona, New Mexico, Maryland, Idaho, and other states
- USDA Natural Resources Conservation Service and Forest Service
- USDI Geological Survey, Bureau of Land Management and National Park Service
- US National Oceanic and Atmospheric Administration and National Weather Service
- NASA Goddard Space Flight Center and Jet Propulsion Laboratory
- US Department of Defense Armed Forces and Corps of Engineers

Arizona State Agencies:
- State Land Department
- Department of Water Resources
- Department of Environmental Quality

Universities:
- University of Arizona, Arizona State University and Northern Arizona University
- Michigan State University
- University of Wyoming
- University of Maryland

Non-governmental Agencies:
- Upper San Pedro Partnership
- The Audubon Society
- The Nature Conservancy
- Natural Resources Conservation Districts

Other Nations:
- Mexico, Spain, Australia, China and more

Contact

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http://www.ars.usda.gov/News/News.htm?modecode=53-42-45-00

USDA ARS

Southwest Watershed Research Center
Tucson, Arizona

Sound Science for Water Decisions

"To develop knowledge and technology to conserve water and soil in semi-arid lands"

SWRC Field Research

Walnut Gulch Experimental Watershed (WGEW) and Southern Arizona

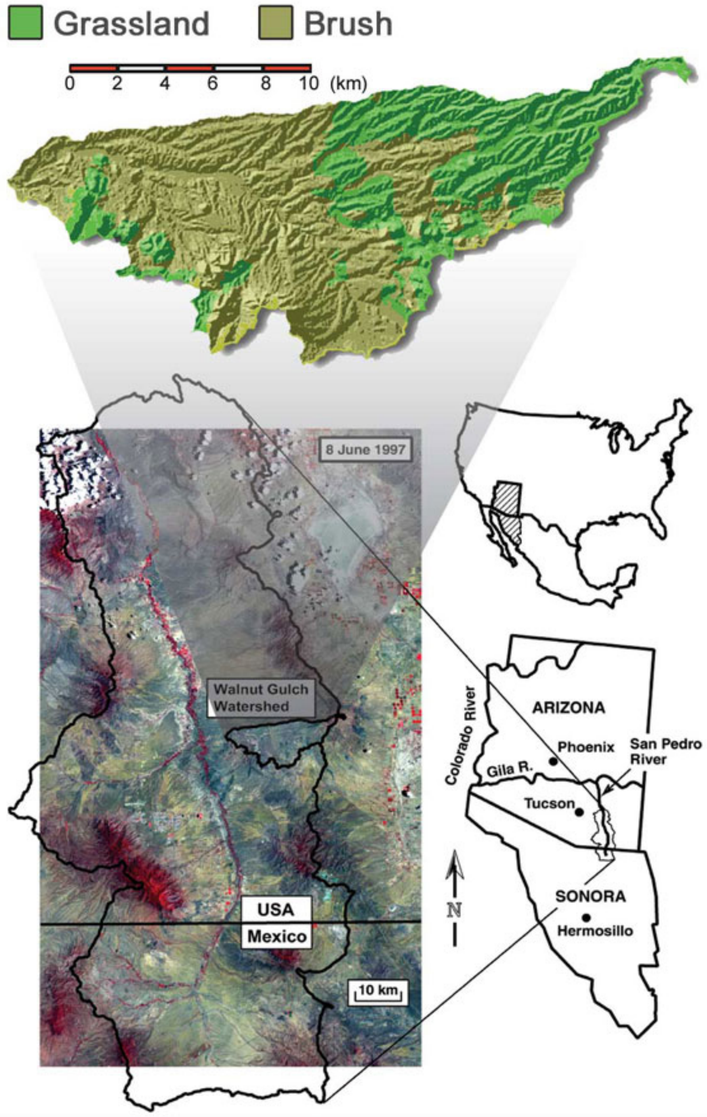
The high-density network of 100 raingages in WGEW & the San Pedro Valley has improved NOAA design storms for mitigating storm damages.

Large flumes at WGEW automatically measure storm runoff and have been used to improve flood plain management in the Southwestern U.S.

Small flumes measure water yield and sediment transport at WGEW & the Santa Ritas to improve soil health, productivity and sustainability.

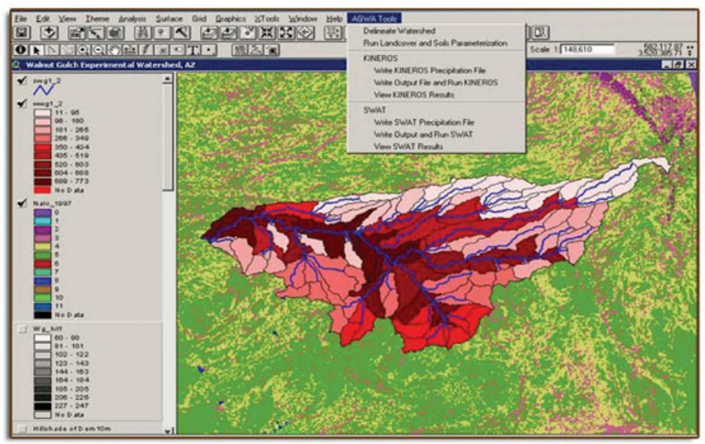
The use of satellites and aircraft for field reconnaissance has resulted in new technology for resource managers, ranging from local ranchers to the U.S. Army.

Mobile rainfall simulators developed by SWRC have resulted in the world's largest database on rangeland hydrology and erosion, and the development of key erosion assessment models.



The measurement of sediment accumulation in stock ponds quantifies rangeland erosion rates.

Continuous measurements of rainfall, temperature, soil moisture, evaporation, carbon dioxide exchange and plant water use are contributing to the long-term economic sustainability of rangelands and riparian areas.



Computer models have been developed by SWRC scientists to allow land managers to quantify the impacts of land cover change on runoff, erosion, and water quality and quantity.

Interdisciplinary research projects are the hallmark of the Walnut Gulch Experimental Watershed attracting a variety of researchers because of the long history of experimentation, data collection, excellent infrastructure, and SWRC support.